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United States Department of the Interior
Fish and Wildlife Service

Fishery Leaflet 97

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FISH CULTURE AS A LIVELIHOOD

Fish hatcheries are operated by the Federal Government, the State Fish and Game Departments, and as private commercial enterprises. Thus a person may become engaged in the work, either as an employee, or as an independent private operator. This leaflet is intended to outline the opportunities, limitations, and requirements for the benefit of those who look upon hatchery work as a possible permanent means of livelihood. It does not cover regular commercial fishing or guiding of sport fishing parties.

EMPLOYMENT POSSIBILITIES

The number of permanent employees required to man the Federal fish hatcheries barely exceeds 300. Several hundred more are given temporary seasonal employment. All the permanent employees are appointed from lists of qualified Civil Service eligibles. Temporary employees are generally recruited from the immediate vicinity of the hatcheries, and the work is of short duration. The turnover in the list of permanent employees is low in normal times and the opportunities for placement are correspondingly limited.

The State hatcheries employ a somewhat larger number of people, the total personnel being possibly around one thousand. The policy of selection of employees varies among the States. In many of them Civil Service procedure is followed. In the majority of the States employment is restricted to residents.

Commercial hatcheries employ a small staff of workers also, but it is probable that the employment at private establishments does not exceed 500 persons for the United States. It is therefore evident that the nation-wide total of fish hatchery workers does not greatly exceed 2,000, and there is little prospect of any marked expansion. Since newcomers can be employed only as replacements, there are no grounds for listing fish-cultural work as a vocation capable of absorbing, as employees, more than a limited number of individuals.

HATCHERY OPERATION AS A BUSINESS

Privately owned commercial trout hatcheries have been in operation for a great many years. These establishments vary from small units carried on in connection with farming or ranching to a few large-scale plants conducted for the purpose of raising trout for food, for sale for stocking purposes, and for the sale of eggs. A few establishments propagate other species of fish,

principally bass, catfish, and sunfish, selling their production to clubs or State agencies for stocking purposes. There are a few large units propagating goldfish and other ornamental fishes. These dealers are able to meet demands in normal times so that it is difficult for the small operator to make a living in this field.

Commercially reared trout sold for food are a relatively high-priced product and the capacity of the market to absorb increased production is questionable. Likewise, potential outlets for eggs and young fish for stocking are limited. Any great influx of new operators into the field of private commercial fish culture probably would have a depressing effect upon markets, although limited increases may be absorbed. As in any other business, a commercial hatcheryman having the advantages of adequate financing, a superior location, and some experience, will enjoy better prospects of success. The individual who is propagating fish as a sideline and is not dependent upon the income from this source for his livelihood, will also be in a more advantageous position. Any person contemplating the development of a commercial fish-cultural project should first give careful study to potential markets and know beforehand where he can sell his production. Ordinarily trout are marketed through commission merchants in large distributing centers or directly to seafood wholesalers, restaurant or hotel chains, and railroad dining car services.

Among the possibilities which deserve investigation is the operation of establishments providing fishing for the general public at a fee. Such a plant consists of ponds, pools, or a stretch of stream kept constantly stocked with game fish from a hatchery. A charge is made either on the basis of an entrance fee, a charge per pound of fish taken, or a combination of these. A person operating such a project provides his own market for his hatchery production and has an opportunity to secure additional revenue by such means as rental of boats, sale of bait, or other related projects. Location is the all-important element for such an enterprise.

The propagation of trout requires an abundant water supply of low temperature, such as is obtained from large springs. This fact in itself sharply limits the opportunities for starting a trout hatchery. It further adds to the initial cost since good trout waters or large springs are valuable properties because of their scarcity even in areas within the normal range of trout.

EXPERIENCE REQUIRED

Fish culture is a technical work requiring specialized techniques which are not readily learned in any other activity. No schools or institutions are at this time providing training in practical hatchery work, although there is discussion of instituting such courses at the close of the war. The individual entering this field must therefore acquire his experience either by working at a fish hatchery or by studying the literature. As indicated above, the opportunities for learning while earning are limited. The technique is not so complicated but that the principles can be acquired from the various books, pamphlets, and bulletins which are available from Federal, State, and private sources.

However, there are many details of management of a fish hatchery which will escape the attention of anyone who is depending solely upon written instructions. If the start has been made in a small way, the inevitable losses that will occur from diseases, improper feeding, incorrect design of ponds, etc., will not be serious. If, however, a considerable amount has been invested in a fish hatchery project which is to be managed and operated by someone lacking previous experience, the losses may be disastrous. In short, a person having access to a suitable site can start the propagation of trout, or possibly other species, on a limited scale and learn as he goes. A few hundred dollars investment will provide a small battery of rearing ponds and even simple hatching facilities. If, however, a project of any magnitude is considered, the construction should be planned by someone familiar with hatchery lay-out and design, and the operation should be supervised by an experienced fish-culturist until the owner has gained familiarity with the problems of caring for eggs, fry and adult fish, detecting and combating diseases, and feeding.

GENERAL CONSIDERATIONS

The operator of a private commercial fish hatchery must take out a permit or license issued by the State Fish and Game Department. The regulations governing hatchery operations and the marketing of fish vary with each State. There are no Federal regulations controlling this activity. The methods followed in propagating fish differ for the different types. The trouts are the most amenable to artificial propagation. The warm water or panfish are reared in so-called hatcheries which are merely semi-natural ponds designed to afford optimum conditions for natural reproduction. Many other species of fishes, particularly marine varieties, cannot be reared beyond a few days after hatching, and consequently offer no prospect for profitable propagation.

Just as individuals who have started a small home aquarium as a personal hobby, have gradually expanded to the commercial breeding of fancy tropical aquarium varieties and goldfish, so land owners, who have "played around" with trout or other game fish, have developed their hobby to a commercial basis. The number of individuals who have started with no background of previous experience or interest, and established themselves as a commercial operator on a profitable basis, is quite limited. Likewise, the list of employees at hatcheries operated by the Federal or State Governments, or by private individuals, is confined largely to those who, through special circumstances, were able to become familiar with the work beforehand. War veterans, in particular, who are attracted by the outdoor nature of the work, and have no other special qualifications, should recognize fully that fish culture is a field which can accommodate an extremely limited number of practitioners. Here, as in any other activity, experience, industry, sufficient capital, and, above all, favorable natural locations, in the case of private establishments, will pay.

The following list of publications of the former Bureau of Fisheries and its successor, the U. S. Fish and Wildlife Service, will serve as a

guide to available literature concerning fishes. Government publications are available in most public libraries, especially those that are Government Depositories; while inquiries should be made to the sources indicated in the case of the other publications mentioned.

* American catfishes; habits, culture and commercial importance, by Wm. C. Kendall. Document No. 733. Report of Commissioner of Fisheries for 1908.

Artificial propagation of brook trout and rainbow trout, with notes on three other species, by Glen C. Leach, Document No. 955, 76 pp. 1939.

* Artificial propagation of marine species of fishes. Document No. 522. Report of Commissioner of Fisheries for 1897.

* Artificial propagation of pike perch, yellow perch, and pikes, by Glen C. Leach. Document No. 1018. Appendix 1 to Report of Commissioner of Fisheries for 1927.

* Artificial propagation of shad, by Glen C. Leach. Document No. 981. Appendix 8 to Report of Commissioner of Fisheries for 1924.

* Artificial propagation of whitefish, grayling, and lake trout, by Glen C. Leach. Document No. 949. Appendix 3 to Report of Commissioner of Fisheries for 1923.

* Care and diseases of trout, by H. S. Davis. Investigational Report No. 35, 1937.

Construction of farm fish ponds. Fishery Leaflet No. 17, 1943.

Culture of rainbow and brook trout in ponds, by Glen C. Leach. Economic Circular No. 41, 1919.

* Experiments in culture of black bass and other pondfish, by H. S. Davis and A. H. Wiebe. Document No. 1085. Appendix 9 to Report of Commissioner of Fisheries for 1930.

Farm fish ponds and their management. Fishery Leaflet No. 27, 1943.

Fertilization of fish ponds. Fishery Leaflet No. 12, 1943.

Fish stocking as related to the management of inland waters, by M. C. James, O. Lloyd Meehean, and E. J. Douglass. Conservation Bulletin No. 35, 1944, Fish and Wildlife Service, U. S. Department of the Interior.

* Instructions for conducting stream and lake surveys, by H. S. Davis, Fishery Circular No. 26, 1938.

Use of sodium arsenite for controlling vegetation in fish ponds. Fishery Leaflet No. 10, 1943.

* Out of print.

Beckman, William C.
Meet Mr. Bluegill. Reprint from Michigan Conservation, Vol. X, No. 7 June 1941.

Clark, Marion.
Farm ponds in Missouri. Missouri Agricultural Extension Service, Circular No. 482, 1943.

Curtis, Brian.
The life story of the fish. Published by D. Appleton-Century Co., New York City, 260 pp. 1938.

Davison, Verne C. and J. A. Johnson.
Fish for food from farm ponds. U. S. Department of Agriculture, Farmers Bulletin No. 1938, 1943.

Eddy, Samuel and Thaddeus Surber.
Northern fishes. University of Minnesota Press, Minneapolis, Minn., 1943.

Hubbs, Carl L. and Reeve M. Bailey.
The smallmouth black bass. Cranbrook Institute of Science, Bloomfield Hills, Michigan. Bulletin No. 10, 1938.

Hubbs, Carl L. and R. W. Eschmeyer.
The improvement of lakes for fishing. Bulletin of Institute of Fisheries Research No. 2, 1938. University of Michigan, Ann Arbor, Mich.

Morse, K. N., J. R. Benjamin, and E. P. Rinehart.
Cooperative farm pond development. Ohio Division of Conservation and Natural Resources, Columbus, Ohio., 1942.

Needham, Paul R.
Trout streams. Published by Comstock Publishing Co., Ithaca, N. Y. 1938.

Surber, Thaddeus.
Propagation of minnows. Department of Conservation, St.Paul, Minn. 1940.

Swingle, H. S. and E. V. Smith.
Management of farm fish ponds. Bulletin No. 254, Alabama Polytechnic Institute, Auburn, Ala., 1942.

Tunison, A. V., A. P. Phillips, C. M. McCay, C. R. Mitchell and E. O. Rodgers.
The nutrition of trout, Cortland Hatchery. Report No. 5 for 1939. Conservation Department, Albany, N. Y.

Tunison, A. V.
Trout feeds and feeding, 1940. Conservation Department, Albany, N. Y.

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